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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,036	01/15/2002	Toshihiko Tanaka	XA-9613	2902

7590 03/18/2004

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McLean, VA 22102-3833

EXAMINER

PHAN, THIEM D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 03/18/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/045,036

Applicant(s)

TANAKA ET AL.

Examiner

Tim Phan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 9-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment filed in Paper No. 7 (filed 12/29/03) has been fully considered and made of record.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatakeyama et al (US 6,007,969) hereinafter '969.

As applied to claim 1, the '969 teaches, as a prior art, a method of microfabricating a circuit which reads on applicants' claimed limitations, including a step of making ultrafine ditch for conductive trace (Cf. Fig. 15E, element 1c) on a base using a light beam and photomask (Cf. Fig. 15B, elements 4 & 3) except for describing the photomask to be made of nano particles.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the photomask made of nano particles since it was know in the art that nano

particles (Cf. Fig. 3A, element 22) have been used for pattern shielding on a plate (Cf. Fig. 3A, element 21) in an improved invention.

As applied to claim 18, the '969 teaches that the plate having shade pattern is made of glass (Cf. column 4, line 58).

4. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the '969 in view of May et al (US 4,465,749) hereinafter '749.

The '969 teaches a method of microfabricating a circuit which reads on all of applicants' claimed limitations, including nano particles (Cf. Fig. 3A, element 22) used for pattern shielding on a plate (Cf. Fig. 3A, element 21).

The '749 teaches that the toner to be employed as a mask (Cf. column 2, line 16) is made of carbon-black-pigmented (Cf. column 6, lines 4-6) at 20% (Cf. column 12, line 66).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the two teachings and to apply the toner-mask made of carbon pigment (as taught by the '749) at higher ratio and nano size in order to enhance the masking accuracy.

5. Claims 3, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the '969 in view of Takahiro et al (JP 05-289307) hereinafter '307.

As applied to claim 3, the '969 teaches a method of microfabricating a circuit which reads on applicants' claimed limitations.

The '307 teaches, as old art, the highly precise production of wiring (Cf. Fig. 5 a-d, element 51) by photosensitive film (Cf. Fig. 5, element 12) and etching.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the two teachings and to apply the making of conductive tracks (as taught by the '307) with a negative photosensitive film, which is also old in the art, in order to get the wiring corresponding to shade pattern or a photosensitive film to get a reverse through the light exposure mask.

As applied to claim 4, further rejected under 35 U.S.C. 103(a), the '969 and '307 teaches the claimed invention except for having an area of shade pattern relatively smaller than an area of a light transmission region with no shade pattern.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to create an area of shade pattern relatively smaller than an area of a light transmission region with no shade pattern since it was known in the art that the photomask can be patterned from regular size track to nano size one.

As applied to claim 5, the '969 teaches the etching through the photosensitive film (Cf. Fig. 15D, element 2) to form a via in the bottom layer (Cf. Fig. 15D, element 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to fill the via with conductive material to make connection between layers of circuit board.

6. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the '969 in view of the '307 and further view of Kunimichi et al (JP09-321184) hereinafter '184.

The '969 and '307 teach a method of microfabricating a circuit which reads on applicants' claimed limitations.

The '184 teaches the mounting of electronic components (Cf. Fig. 1, element 20 or Fig. 5) on one side of the microcircuit board as an interposer (Cf. Fig. 1, element 10) and the main printed circuit board (Cf. Fig. 1, element 30) on the other side.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the three teachings and to apply the mounting structure (as taught by the '184) in order to create an interposer that matches/ connects the ultrafine and dense circuit of the chips to the normal size circuit of the PCB.

Response to Arguments

7. Applicants' arguments filed 12/29/03 have been fully considered but they are not persuasive for the following reasons:

Applicants recite *inter alia* "... a shade pattern formed on a plate," (Cf. Claim 1, line 3) or "... shade patterns on said plate ..." (Cf. Claim 2, line 5) and "... a photomask comprising a plate ... plate is a glass plate." (Cf. Applicant's remarks, page 9, lines 4-6). The Patent Office's position, as stated in the preceding Action, was and continues to be that since the '969 teaches

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nano particles (Cf. Fig. 3A, element 22) being used for pattern shielding on a plate (Cf. Fig. 3A, element 21) [which plate is made of glass (Cf. column 4, line 58)]. The '969 indeed responds to the claimed invention and hence is properly rejected.

It appears that applicants fail to recognize the scope of the claims when judged in view of the '969. (Cf. *In re Geuns*, 26 USPQ 2nd 1057 (Fed. Cir. 1993)).

8. With the remainder of the claims rejected under 35 USC 103, they stand rejected as carefully articulated in the previous Office Action and in Responses to Remarks in paragraph 7 above.

Furthermore the Office saith not.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tim Phan whose telephone number is 703-605-0707. The examiner can normally be reached on Monday - Friday, 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter VO can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.

TP

Tim Phan
Examiner
Art Unit 3729

CJF
CARL J. ARBES
PRIMARY EXAMINER

tp
March 15 2004